REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 5, 6, 8, 9, 11, 12, 22, and 27 through 35 are now in this case. Claims 1, 2, 13, 14, 17, 18, 20, 21, and 23 through 26 are newly canceled. Claims 5, 6, 8, 9, 11, 12, and 22 are amended. Claims 27 through 35 are added.

The previous claims were all finally rejected under §112, ¶1 because the specification fails to comply with the written description requirement. Specifically, the Examiner maintained the rejection and objection to passages of the specification[1] that contain the parameters *n*, *m*, and D, which the Examiner found to be undefined. In response to Applicant's previous arguments, the Examiner now asserts that an "understanding of the chemical entities involved in the claimed invention is vital to understanding the claimed invention".[2]

Applicant again traverses this basis of the rejection. It is well-known in the art to use variable name parameters, such as *n* and *m*,[3] to indicate the number of atoms of a constituent element that are present in a molecule of a compound in cases in which the actual stoichiometry is not known or is unimportant. The skilled reader will also realize, from the context of the use of these parameters in the specification, that the particular values of parameters *n* and *m* are not important to understanding this invention, but will depend on the particular species.

The examples shown in the specification are instructive in this regard. For example, for silicon as a constituent element in the compound $Si(OCH_2CH_3)_4$,[4] the value of *n* is 4, and the value of *m* is 1[5]. Or if the constituent R^1 is also bound to a single silicon atom in the compound,[6] then the sum of the *m* R^1 atoms and the 4-*m* X atoms in the molecule equals four. It is clear from the description that this compound is described somewhat generically (the constituent A may "be

[1] Specification of S.N. 10/826,613, page 7, lines 18 through 21; page 9, lines 6 and 7; page 20, lines 6 through 8.
[2] Office Action of July 25, 2006, page 3.
[3] Or, alternatively, *x* and *y*.
[4] Specification, *supra,* page 9, lines 6 through 11.
[5] Following the formula AX_n or $A(R^1)_mX_n$ on page 7, lines 16 through 19.
[6] Specification, *supra,* page 9, line 6.

any metal, semimetal, transition metal, or ceramic species including but not limited to Si, Zr, HF, Nb, Ti, Ta, Cu, Ag, and Al, binary compounds such as GaAs or InP, ternary or more complicated compounds, and their oxides"[7]), with varying available bonds (or ionization states) relative to one another. As such, the number of those atoms or molecules in a molecule of the compound is not known. Properly, therefore, the number of atoms or molecules of this constituent A is expressed with a variable, namely *m*.

Therefore, Applicant submits that the variable name parameters *n* and *m* are not "chemical entities" *per se*, but simply refer to numbers of atoms or constituent molecules that may be present in a molecule of a given compound. Applicant submits that one skilled in the art having reference to this specification would clearly understand the meaning of the parameters *n* and *m*, and respectfully traverses this basis of the rejection.

Regarding the parameter D, Applicant again maintains that this parameter D clearly refers to a constituent of a compound to which the R^2 species is bound, which enables the R^2 species to then react with and displace the reactive species X. The D constituent does not participate in the reaction, as is evident from the specification, and as such its particular identity is unimportant in the context of the invention as described in that location of the specification. The presence of some constituent D is useful to the reader, however, because it indicates that the compound DR^2 is indeed a compound. And the specification itself clearly states that the nucleophilic molecule has "the general formula DR^2".[8] Therefore, the skilled reader would clearly understand, from the specification, that the parameter D corresponds to a reagent that reacts with the unreactive organic substituent R^2 to form a nucleophilic molecule having the general formula DR^2, examples of which include alcohols, amines, carboxylic acids, phenols, thiols, and phosphoric acids.[9] Accordingly, Applicant submits that one skilled in the art having reference to this specification would clearly understand the meaning of the parameter D, and respectfully traverses this basis of the rejection.

---

[7] Specification, *supra,* page 7, lines 26 through 30.
[8] Specification, *supra,* page 7, line 21.
[9] Specification, *supra,* page 8, lines 7 through 9.

Applicant therefore respectfully requests withdrawal of the §112, first paragraph, rejection of the claims on this basis.

The Examiner also finally rejected the claims under §112, ¶1 because it was unclear whether the "O" characters above the surface in the Figures are oxygen atoms, and if so, how the oxygen atoms are attached to the surface. Applicant again traverses this basis of the rejection. It is readily apparent from the description[10] that the original surface being treated is an oxidized surface. The "O" characters thus clearly refer to the oxygen atoms within such oxide compounds (*i.e.,* the "oxidized" substance). And Applicant respectfully submits that the manner in which oxygen atoms are "attached" within molecules of an oxide compound is a fundamental concept, known by those having the slightest training in chemistry. Specifically, Applicant submits that the types of chemical bonds by way of which oxygen may be bound in an oxide compound is well-known, if not fundamental in the art of chemistry.[11] Applicant therefore respectfully submits that the Figures are not unclear in this regard, and traverses the rejection on this basis.

In addition, to advance the prosecution of this application, Applicant presents amendment to Figures 1 and 2 in this paper. This amendment to the drawings is proposed in order to convey that the oxygen atoms (the "O" characters) are part of the oxidized surface passivated according to the disclosed and claimed method. The specification clearly describes that the surface being passivated is oxidized (whether already oxidized, or deliberately or further oxidized for purposes of passivation),[12] and therefore this amendment to the drawings does not add new matter. By now being shown in Figures 1 and 2 as part of the surface, rather than floating above the surface, Applicant is hopeful that this amendment to the drawings can finally overcome and obviate this basis of the rejection.

For the foregoing reasons, Applicant submits that the claims in this case are fully supported by a written description, within the requirements of §112, ¶1.

---

[10] Specification, *supra,* page 7, lines 16 through 20.
[11] *See, e.g.,* http://en.wikipedia.org/wiki/Chemical_bond.
[12] Specification , *supra,* page 7, lines 5 through 8 and 16 through 19; page 9, lines 6 and 7 and 12 through 15; page 10, lines 1 and 2; page 11, lines 19 through 24.

Claims 1 through 3, 5, 6, 8 through 15, 17, 18, and 20 through 26 were finally rejected under §102 as anticipated by the Ogawa et al. reference.[13] The Examiner again asserted that the reference teaches the applying of TEOS or other alkoxysilanes to substrates such as glass, metal and ceramics,[14] and that the trimethyoxy groups hydrolyze to an alcohol, and react with the TEOS on the substrate to form a water repellent fluorine-containing coating.[15] In response to the previous arguments of Applicant, the Examiner asserts that the Figures and paragraph [0146] of the reference show that the disclosed reaction of the silane compound with the TEOS coating forms a new film, rather than two independent films.[16]

The previous independent claims are canceled, and a new independent claim 27 is presented, to clarify its novelty and thus overcome the §102 rejection. New claim 27 restates the claimed method for the sake of clarity, in a manner clearly supported by the specification.[17] No new matter is presented.

Claims 1, 2, 13, 14, 17, 18, 20, 21, and 23 through 26 are canceled, and claims 5, 6, 8, 9, 11, 12, and 22 are amended, for consistency with new independent claim 27. Claims 28 through 35 are added to more completely cover all aspects of Applicant's invention, and all are clearly supported by the specification as will now be summarized.

New claim 28 further recites that the applying step is performed by vapor phase deposition.[18] Claim 29 further recites that the compound of the active species applied in the applying step comprises an inert substituent.[19] Claim 30 further recites that the applying step is performed by a high vacuum system.[20] Claim 31 further recites that the reacting step comprises flooding the surface with an excess of the nucleophilic molecule.[21] Claim 32 further recites that the alcohol comprising the nucleophilic molecule, as recited in claim 12, is a long chain

---

[13] U.S. Patent Publication No. 2001/0031364, published October 18, 2001, on an application by Ogawa et al. filed March 29, 2001.
[14] Ogawa et al, *supra,* paragraphs [0082] and [0084].
[15] *Id.,* paragraphs [0136] and [0153].
[16] Office Action, *supra,* page 8.
[17] Specification, *supra,* page 7, lines 16 through 25.
[18] Specification, *supra,* page 7, line 30 through page 8, line 2.
[19] Specification, *supra,* page 8, lines 4 through 6.
[20] Specification, *supra,* page 8, lines 12 and 13.
[21] Specification, *supra,* page 8, lines 17 through 20.

alcohol.[22] Claim 33 further recites, relative to claim 12 upon which it depends, that the applying step is performed in a specified temperature range.[23] Claim 34 further recites, relative to claim 33, that the applying step is performed by vapor phase deposition.[24] And claim 35 further recites, relative to claim 12 upon which it depends, that the second constituent comprises ethoxy groups.[25]

Given the clear support in the specification for these new claims, Applicant submits that no new matter is added.

Applicant respectfully submits that claim 27 and its dependent claims are novel and patentably distinct over the Ogawa et al. reference, because the reference does not meet the requirements of the claims. Specifically, the Ogawa et al. reference does not teach the reacting of a nucleophilic molecule with the exposed reactive group to displace the reactive group, and to covalently bond with the first constituent, as required by new independent claim 27.

The Examiner asserted that paragraph [0145] taught the reacting step of the previous independent claims.[26] However, that portion of the reference mentions nothing about displacing any group or constituent of the previous film. Rather, that passage teaches that the fluoroalkyl trimethoxy silane compound was mixed and dissolved in methanol, and is "applied under a dry atmosphere to the glass substrate 1 provided with the first layer of silica-based coating film".[27] This passage further states that this fluoroalkyl trimethoxy silane compound undergoes a "dealcoholization reaction" – but this dealcoholization clearly can only refer to the release of the methanol solvent, because no other alcohol is disclosed as present in either of these two films. And while this passage states that the fluoroalkyl trimethoxy silane compound forms "covalent bonds through the siloxane bonds", there is no teaching or suggestion that this reaction displaces any reactive group from a compound previously applied to the substrate. Therefore, Applicant submits that new claim 27 and its dependent claims are novel over the Ogawa et al. reference.

---

[22] Specification, *supra,* page 9, lines 8 through 11.
[23] Specification, *supra,* page 9, lines 12 through 15.
[24] Specification, *supra,* page 9, lines 15 through 17.
[25] Specification, *supra,* page 9, lines 12 through 31.
[26] Office Action, *supra,* page 4.
[27] Ogawa et al., *supra,* paragraphs [0145] and [0146].

This novelty of the claims over the Ogawa et al. reference is also apparent from the teachings of the Ogawa et al. reference regarding the forming of two films, one on top of another, as previously argued by Applicant. For purposes of context, the "Summary of the Invention" portion of the Ogawa et al. reference is instructive:

> This and other objects are accomplished in accordance with the present invention by providing a method of producing an anti-contaminant coating film, comprising:
>
> contacting a surface of a substrate with a solution for forming a silica-based coating film in a dry atmosphere, the solution comprising a first organic solvent and a silane-based chemically adsorbing substance, and thereafter evaporating the first organic solvent;
>
> **forming, on the substrate, a silica-based coating film** having hydroxyl groups by contacting the silane-based chemically adsorbing substance on the substrate with water;
>
> **forming a fluorine-containing coating film on the silica-based coating film** by, without baking the silica-based coating film, contacting the substrate with a solution for forming a fluorine-containing coating film, the solution comprising a fluorine-containing silane-based chemically adsorbing substance and a second organic solvent; and
>
> baking the substrate in an inert gas atmosphere, **the substrate having the silica-based coating film and the fluorine-containing coating film formed thereon**.[28]

As evident from the Ogawa et al. reference itself, therefore, the purpose of the teachings of that reference are to form two films, one (the fluorine-containing coating film) on top of the other (the silica-based coating film). This two-film formation disclosed by the Ogawa et al. reference supports Applicant's assertion that there is no displacement of a constituent of the previously-applied compound; rather, the Ogawa et al. reference teaches the forming of a first film, and then the forming of a second film on that first film. Therefore, the Ogawa et al. reference does not teach the forming of a single film, much less such a single film in the form of a "monolayer", as alleged by the Examiner.[29]

Therefore, because each of the claims in this case require the forming of a coating by reacting a nucleophilic molecule with an exposed reactive group present from the applying of an

---

[28] Ogawa et al., *supra,* paragraphs [0009] through [0013] (emphasis added).
[29] Office Action of April 4, 2007, page 4, paragraph 9.

active species to the oxidized surface, such reacting displacing the exposed reactive group, Applicant respectfully submits that the Ogawa et al. reference falls short of the requirements of new independent claim 27. Applicant therefore submits that all of the claims in this case are therefore novel over the Ogawa et al. reference.

The Examiner also yet again rejected the previous claims under §102 as anticipated by the Europe '740 reference.[30]

Applicant also respectfully submits that the claims now in this case are novel over Europe '740. As in the case of the Ogawa et al. reference, the Examiner does not assert that the reference teaches, and the reference in fact does not teach, the reacting of a nucleophilic molecule, having an organic substituent, with a reactive group to form a bond between the nucleophilic molecule and a constituent from a previously applied active species, much less the displacing of an exposed reactive group therefrom.

As in the case of the Ogawa et al. reference, this reference also discloses the applying of a second coating over a first film, with no disclosed reacting between the alleged nucleophilic molecule and a first constituent from the first reacting. The absence of this reacting is especially evident from Figure 1 of Europe '740, in which the second coating step (b) adds an additional layer including silicon atoms, with no illustrated bond between any alleged nucleophilic molecule and an underlying silicon atom, for example, from the first coating step (a). Indeed, this portion of the reference states that the second coating step (b) results in the chemical adsorption of the silane-based compound.[31] And the Europe '740 reference also teaches that its process step (c) merely "polymerizes" the component of the underlying layer[32] – no reacting as required by the claims, much less displacement and covalent bonding as now recited by new claim 27, is taught by the Europe '740 reference in connection with its Figure 1c). Accordingly, Applicant again submits that the teachings of Europe '740 fall short of the requirements of each of the claims in this case.

---

[30] European Patent Publication EP 1 153 740 A1, published November 14, 2001.
[31] Europe '740, *supra,* paragraph [0115].
[32] *Id.*

For these reasons, Applicant respectfully submits that Europe '740 falls short of the requirements of these claims. Applicant therefore submits that all of the claims in this case are therefore novel over that reference also.

Applicant further submits that the claims in this case are not only novel, but are patentably distinct over the prior art in this case. In particular, as clearly described in the specification,[33] this invention provides the important advantages of a single monolayer that is very regular, and hydrophobic, such that water is prevented from adhering to the small surface. This single monolayer results from the reacting step of claim 27, in which a reactive group from the previously applied active species is displaced by the nucleophilic molecule. Intermolecular forces and the effects of van der Waals, dipole, or capillary forces, are thus prevented from effecting very small moving elements, such as the micromachined device as a digital micromirror. These important benefits stem directly from the difference between the claims and the prior art in this case, and strongly illustrate the patentability of these claims.

For these reasons, Applicant respectfully submits that all claims in this case are in condition for allowance. Reconsideration of this application is respectfully requested.

Respectfully submitted,
/Rodney M. Anderson/
Rodney M. Anderson
Registry No. 31,939
Attorney for Applicant

Anderson, Levine & Lintel, L.L.P.
14785 Preston Road, Suite 650
Dallas, Texas 75254
(972) 664-9554

[33] Specification, *supra,* page 11, lines 2 through 10; page 12, line 25 through page 13, line 2.